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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/702,850	11/01/2000	Jae-eun Jang	030681-253	9540

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EXAMINER

YUN, JURIE

ART UNIT PAPER NUMBER

2882

DATE MAILED: 05/20/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

09/702,850

Applicant(s)

JANG, JAE-EUN

Examiner

Jurie Yun

Art Unit

2882

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 15 April 2003.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1,5,6,10 and 11 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1,5,6,10 and 11 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 01 November 2000 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.  
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☒ All b) ☐ Some \* c) ☐ None of:  
1. ☒ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).  
\* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).  
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

- 1) ☐ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_ 6) ☐ Other: \_\_\_\_\_

## DETAILED ACTION

### *Claim Rejections - 35 USC § 103*

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1, 5, 6, and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Masuda et al. (USPN 4,424,467) and further in view of Matu (JP 52 030276).

3. With respect to claims 1 and 6, Masuda et al. disclose a high-brightness phosphor screen (12), comprising: a luminescent material (13) for emitting light of a predetermined color, used for color image display; and a ZnO:Zn phosphor (column 4, line 12) capable of enhancing the brightness of the display, wherein the mixing ratio of the luminescent material to the ZnO:Zn phosphor is varied according to a desired level of brightness (column 3, lines 4-20). The method for forming the high-brightness phosphor screen is disclosed in column 3, lines 20+.

Masuda et al. do not disclose the luminescent material comprises at least one blue light-emitting phosphor selected from the group consisting of (Zn,Cd)S:Ag, (Zn,Cd)S:Ag,Cl, (Zn,Cd)S:Ag,Cl,Al and (Zn,Cd)S:Ag,Cl,Mg, or a green light-emitting phosphor, (Zn,Cd)S:Cu,Al,Au. Matu discloses this (Abstract, line 2). It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the Masuda et al. invention and disclose the luminescent material comprises at

least one blue light-emitting phosphor selected from the group consisting of (Zn,Cd)S:Ag, (Zn,Cd)S:Ag,Cl, (Zn,Cd)S:Ag,Cl,Al and (Zn,Cd)S:Ag,Cl,Mg, or a green light-emitting phosphor, (Zn,Cd)S:Cu,Al,Au, as taught by Matu. As disclosed by Matu in the Abstract, this would result in a higher luminance.

4. With respect to claims 5 and 10, Masuda et al. disclose the amount of the ZnO:Zn phosphor added is 20% or less by weight based on the weight of the luminescent material (column 3, lines 4-20).

5. Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over Masuda et al. (USPN 4,424,467) in view of Matu (JP 52 030276) as applied to claim 6 above, and further in view of Hideto (Patent Abstracts of Japan 11-167868).

6. With respect to claim 11, Masuda et al. and Matu do not specifically disclose the phosphor layer is formed by depositing the phosphor mixture solution on the substrate with the application of electrophoresis, screening, photolithography or precipitation. Hideto discloses this (Means, paragraph 0015). It would have been obvious to one of ordinary skill in the art at the time the invention was made to further modify the Masuda et al. invention and disclose the phosphor layer is formed by depositing the phosphor mixture solution on the substrate with the application of electrophoresis, screening, photolithography or precipitation, as taught by Hideto. These are all well known means in the art for depositing a mixture solution onto a substrate.

### ***Response to Arguments***

7. Applicant's arguments filed 4/15/03 have been fully considered but they are not persuasive. Applicant believes Masuda et al. do not recite the limitation of "the

luminescent material comprises at least one blue light-emitting phosphor selected from the group consisting of (Zn,Cd)S:Ag, (Zn,Cd)S:Ag,Cl, (Zn,Cd)S:Ag,Cl,Al and (Zn,Cd)S:Ag,Cl,Mg, or a green light-emitting phosphor, (Zn,Cd)S:Cu,Al,Au.” However, it was never suggested that Masuda et al. disclose this. Masuda et al. disclose the luminescent material is a blue or green light-emitting phosphor (column 3, lines 20+) with the addition of ZnO:Zn phosphor (column 4, line 12). Matu was cited as disclosing the particular light-emitting phosphor. Specifically, Matu discloses the use of a blue light-emitting phosphor, ZnS:Ag,Cl in addition to ZnO:Zn. It would have been obvious to one of ordinary skill in the art to apply this teaching about the combination of ZnS:Ag,Cl and ZnO:Zn to the Masuda et al. invention to produce a high brightness phosphor screen, as taught by Matu. It is to be noted that ZnS:Ag,Cl is the same as (Zn,Cd)S:Ag,Cl since the items in parentheses separated by a comma denotes one or the other (e.g. ZnS:Ag,Cl or CdS:Ag,Cl).

### ***Conclusion***

8. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

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the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jurie Yun whose telephone number is 703 308-3535.

The examiner can normally be reached on Monday-Friday 8:30-5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert H. Kim can be reached on 703 305-3492. The fax phone numbers for the organization where this application or proceeding is assigned are 703 308-7722 for regular communications and 703 308-7722 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703 308-0956.

Jurie Yun  
May 15, 2003

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